

Rotational Deformity In Humeral Supracondylar In Children. Does It Matter?

¹Kamaludin NAA, ¹Rashid AHA, ²Ahmad AR, ¹Ibrahim S

¹Orthopaedics and Trauma, Faculty of Medicine, Universiti Kebangsaan Malaysia, Cheras, 56000, Kuala Lumpur

²Orthopaedics and Trauma, Hospital Tuanku Jaafar, Seremban, Negeri Sembilan

INTRODUCTION:

Isolated rotational deformity following fixation of supracondylar fracture of humerus is not well reported in literatures due to low incidence. Controversy arises when deciding whether it needs revision as little understanding that we have on functional outcome in child with such residual deformity.

METHODS:

We conduct a retrospective study of children who underwent closed reduction and percutaneous pinning following unstable supracondylar humerus fractures in 2013-2016. Patients were grouped into two; group 1 – those with acceptable reduction and no rotation and group 2- those with clinical and radiological evidence of rotation. Range of motion, motion loss degree, and carrying angle loss were analysed. Demographic data and complications including nerve injury, pin tract infection were recorded.

RESULTS:

Significant degree of motion losses in flexion ($p=0.015$) and supination ($p=0.022$) were identified in patients with rotation. Motion loss of extension ($p=0.44$), pronation ($p=0.153$) and carrying angle loss ($p=0.143$) were not statistically significant. 19 (90.5%) patients with rotation achieved satisfactory results with excellent (7.0%), good (25.6%) and fair (11.6%) scores respectively. Only 2 (9.5%) had poor functional scores based on Flynn's criteria. All patients ($n=22$, 100%) without rotation had achieved satisfactory results based on Flynn's criteria.

DISCUSSIONS:

Remodelling potential of supracondylar humeral fracture is not great based on the fact that distal humerus only contributes 20% of humeral growth [1]. Due to poor remodelling capacity, up to 30-45degree of rotation malalignment in axial plane can be accepted as shoulder rotation can compensate [2].

Table shows results between 2groups, complications and outcomes.

Parameters	
Radiographic Evaluation	
Internal Rotation deformity	21 (48.8%)
No rotation	22 (51.2%)
Neurology deficit	
radial nerve palsy (preoperative)	1 (2.3%)
ulnar nerve palsy (iatrogenic)	1 (2.3%)
Pin tract infection	
superficial	1 (2.3%)
Flynn's criteria	
No rotation group vs Internal Rotation group	
- Excellent	19(44.1%) vs 3(7.0%)
- Good	2,3 (3.4%) vs 11 (25.6%)
- Fair	2(4.7%) vs 5 (11.6%)
- poor	0 (0.0%) vs 2 (4.7%)
Satisfactory	22(100%) cases vs 19 (90.5%) cases
Unsatisfactory	0 cases vs 2 (9.5%) cases

Figure1: Assessment of rotation deformity following left supracondylar humeral fractures



CONCLUSION:

Children with residual rotation achieved satisfactory function despite some degree of flexion and supination loss. Our thought again based on the fact that compensatory shoulder rotation has taken place successfully enough to overcome such limitations, thus renders revision unnecessary.

REFERENCES:

1. Nikolic H. et al. Bone remodelling after supracondylar humeral fracture in children. *Coll Antropol.* 2014; 38(2): 601-604.
2. Takahara M et al. Second fracture of the distal humerus after varus malunion of a supracondylar fracture in children. *J Bone Joint Surg (Br).* 1998;80(B):791-97